UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/544,203	08/02/2005	Minne Van Der Veen	NL 030107	8135

24737   7590   11/30/2007
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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ART UNIT	PAPER NUMBER
2131	

MAIL DATE	DELIVERY MODE
11/30/2007	PAPER

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PTOL-90A (Rev. 04/07)

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 10/544,203
Filing Date: August 02, 2005
Appellant(s): VAN DER VEEN ET AL.

Brian S. Myers
Reg. No. 46,947
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 17 September 2007 appealing from the Office action

mailed 17 April 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings

which will directly affect or be directly affected by or have a bearing on the Board's decision in

the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2004/0024588 A1	WATSON	02-2004
2006/0140406 A1	VAN DER VEEN et al.	06-2006

Harris, Frederic J. "On the Use of Windows for Harmonic Analysis with the Discrete

Fourier Transforms" January 1978. Proceedings of the IEEE, vol. 66, no. 1, p. 51-83.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 14 is rejected under 35 U.S.C. 101 because the claimed invention is directed to

non-statutory subject matter. One of ordinary skill in the art could reasonable interpret the

computer-readable medium as being 1) a transmission medium (i.e. instructions via a computer

network) as disclosed in paragraph 0062 of US 2006/0140406 (the Application Publication of the

instant application) or 2) as a carrier wave, as the claim is directed to processing signals. The

Office's current position is that claims involving signals encoded with functional descriptive

material do not fall within any of the categories of patentable subject matter set forth in 35

U.S.C. § 101, and such claims are therefore ineligible for patent protection. *See* 1300 OG 142

(November 22, 2005) (in particular, see Annex IV(c)).

Claims 1-12 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.

Patent Application Publication No. 2004/0024588 to Watson et al., hereinafter Watson.·

As per claims 1, 11, and 14, Watson teaches a method of processing an information

signal and a computer program product, the method and computer program product comprising:

applying a signal modification process to an information signal resulting in a processed

signal (paragraphs [0029], [0127], i.e. embedding watermark information in the encoded signal),

said signal modification process being controlled by at least one control parameter (Figure 29,

paragraphs [0029], [0031], i.e. modulating one or more parameters);

comparing the processed signal with the information signal to determine a measure of perceptual quality of the processed signal (Figures 24 [block 24], 25 [block 32], 26 [block 32], paragraph [0212], i.e. compares the original input signal with the encoded signal);

adjusting said at least one control parameter in response to the determined measure of perceptual quality (Figures 24 [block 26], 25 [block 34], 26 [block 38], 30 [block 62], paragraphs [0212]-[0213], [0235]-[0244], i.e. adjusting parameters to improve the imperceptibility of the watermark).

Regarding claim 2, Watson teaches dividing the information signal into a sequence of segments of the information signal (paragraph [0126], i.e. decomposing the input signal into one or more components);

wherein the step of applying the signal modification process comprises applying the signal modification process to a first one of said segments of the information signal resulting in a first segment of the processed signal (paragraphs [0130]-[0144], i.e. applying the function to the first sample with correlation to the correct window sequence);

wherein the step of comparing the processed signal with the information signal comprises comparing said first segment of the processed signal with said first segment of the information signal (Figures 4, 5, paragraph [0146], i.e. comparing the source material and the watermarked data); and

wherein the method further comprises applying at least a part of the signal modification process to a second one of said segments of the information signal resulting in a second segment of the processed signal, the at least part of the signal modification process being controlled by

said adjusted at least one control parameter (paragraph [0129], i.e. modulating the window

parameter adaptively in time depending on signal characteristics).

With regards to claim 3, Watson teaches wherein the second segment of the information

signal is a segment subsequent to the first segment of the information signal in the sequence of

segments of the information signal (Figures 15, 16, paragraphs [0126], [0142]-[0144]).

With regards to claim 4, Watson teaches wherein the first segment of the information

signal being delayed to compensate for a duration of the steps of comparing the processed signal

with the information signal (Figure 3A, paragraph [0108], i.e. delay functions so the signal can

be compared to a time-delayed version) and of adjusting the at least one control parameter

(Figures 24 [block 26], 25 [block 34], 26 [block 38], 30 [block 62], paragraph [0212]-[0213],

[0235]-[0244]).

Regarding claim 5, Watson teaches delaying the information signal to compensate for a

duration of the steps of comparing the processed signal with the information signal (Figure 3A,

paragraph [0108], i.e. delay functions so the signal can be compared to a time-delayed version)

and of adjusting the at least one control parameter (Figures 24 [block 26], 25 [block 34], 26

[block 38], 30 [block 62], paragraph [0212]-[0213], [0235]-[0244]); and

applying at least a part of the signal modification process to the delayed information

signal resulting in a modified processed signal, the at least part of the signal modification process

being controlled by the adjusted at least one control parameter (Figures 24 [block 26], 25 [block

34], 26 [block 38], 30 [block 62], paragraphs [0108]-[0109], [0212]-[0213], [0235]-[0244]).

Regarding claim 6, Watson teaches wherein the signal modification process comprises

determining a watermark signal according to a watermark-embedding model (paragraphs [0002]-

[0009], [0100]);

embedding the determined watermark signal in the information signal (paragraphs

[0213], [0218]).

With regards to claim 7, Watson teaches wherein the signal modification process

comprises determining a watermark signal according to a watermark embedding model

(paragraphs [0002]-[0009], [0100]);

embedding the determined watermark signal in the information signal (paragraphs

[0213], [0218]);

wherein the step of embedding the determined watermark signal is controlled by the at

least one control parameter (Figures 24 [block 26], 25 [block 34], 26 [block 38], 30 [block 62],

paragraphs [0212]-[0213], [0235]-[0244]); and

wherein the step of applying at least a part of the signal modification process to the

information signal comprises delaying the information signal resulting in a delayed signal

(Figure 3A, paragraph [0108]); and

embedding the determined watermark signal in the delayed signal, the embedding being

controlled by the adjusted at least one control parameter (Figures 24 [block 26], 25 [block 34],

26 [block 38], 30 [block 62], paragraphs [0108]-[0109], [0212]-[0213], [0235]-[0244]).

With regards to claim 8, Watson teaches wherein the information signal is an audio signal

and the watermark-embedding model comprises a psycho-acoustic model of the human auditory

system (paragraphs [0010]-[0012], [0041], [0129], [0213]).

Regarding claim 9, Watson teaches wherein the information signal is an audio signal

(paragraph [0029]) and the signal modification process comprises an audio coding process

(paragraph [0042]-[0044], i.e. encoding the primary source signal).

Concerning claim 10, Watson teaches wherein the information signal is an audio signal

(paragraph [0029]) and the signal modification process comprises an audio coding process

(paragraph [0042]-[0044]) comprising determining a bit-allocation pattern for coding audio

signal (Figures 24 [block 24], 29 [block 46], paragraphs [0213]-[0214], [0225]); and

performing a quantization of the audio signal according to the determined bit-allocation

resulting in a quantized signal (Figures 24 [block 26], paragraphs [0213]-[0215]);

wherein the step of comparing the processed signal with the information signal (Figure

29 [blocks 52, 54], paragraph [0225]) comprises reconstructing the audio signal from the

quantized signal (Figure 29 [block 48], paragraph [0225], i.e. inverse quantization); and

comparing the reconstructed signal with the audio signal (Figure 29 [blocks 52, 54], paragraph [0225]);

wherein the step of adjusting said at least one control parameter comprises adjusting the bit-allocation (Figures 24, 29 [block 58], paragraphs [0213]-[0214], [0225]); and

wherein the step of applying at least a part of the signal modification process to the information signal comprises delaying the audio signal resulting in a delayed signal (Figure 3A, paragraph [0108]); and

performing a quantization of the delayed signal according to the adjusted bit-allocation resulting in a processed quantized signal (Figures 24, 29 [block 58], paragraphs [0213]-[0214], [0225]).

Regarding claim 12, Watson discloses a device comprising an arrangement according to claim 11 (paragraph [0029], i.e. perceptual coding system).

(10) Response to Argument

Response to arguments regarding 35 U.S.C. 101 rejection of claim 14

The appellant's arguments on pages 5-8, regarding the 35 U.S.C. 101 rejection of claim 14, filed in the Appeal Brief of 17 September 2007 have been fully considered but they are not persuasive.

The Appellant argues on page 6 that "functional descriptive material claimed in combination with an appropriate computer readable medium to enable the functionality to be realized is patent eligible subject matter if it is capable of producing a useful, concrete and tangible result when used in the computer system." The Examiner agrees with this statement.

The fault the Examiner has found with the Appellant's claim 14 is that the claimed computer readable medium is inappropriate and non-statutory. While the Appellant's specification describes examples of a storage media (see paragraph 0072 of US 2006/0140406 A1), it fails to provide a definition for computer-readable media, which can be interpreted more broadly than storage media. The Appellant states that the "instructions may be program code means loaded in a memory, such as RAM, from a storage medium or from another computer via a computer network" (emphasis added) (see paragraph 0062 of US 2006/0140406 A1). The Appellant's inclusion that the instructions may be transmitted from one computer to another via a computer network would lead one of ordinary skill in the art to construe that the instructions were embodied on an information signal or carrier wave, thereby constituting non-statutory subject matter since the Office's current position is that claims involving signals encoded with functional descriptive material do not fall within any of the categories of patentable subject matter set forth in 35 U.S.C. § 101, and such claims are therefore ineligible for patent protection. *See* 1300 OG 142 (November 22, 2005) (in particular, see Annex IV(c)).

Since the computer-readable medium may be interpreted as an information signal or carrier wave, the 35 U.S.C. 101 rejection of claim 14 should be maintained.

<u>Response to arguments regarding the prior art rejections of independent claims 1, 11, and 14</u>

The appellant's arguments on pages 8-11, regarding the 35 U.S.C. 102 rejection of independent claims 1, 11, and 14, filed in the Appeal Brief of 17 September 2007 have been fully considered but they are not persuasive.

The Appellant argues that the prior art (U.S. Patent Application Publication No. 2004/0024588 A1 to Watson et al., hereinafter Watson) does not teach the Appellant's claimed "comparing the processed signal with the information signal to determine a measure of perceptual quality of the processed signal" (see pages 8-10 with respect to claim 1, pages 10 and 11 with respect to claim 11, and page 11 with respect to claim 14). As noted by the Appellant, the Examiner cited paragraph 0212 of Watson to teach the claimed "comparing the processed signal with the information signal to determine a measure of perceptual quality of the processed signal." Paragraph 0212 states "A distortion measurement compares the original input signal with the encoded signal" thereby teaching at least the appellant's claimed "comparing the processed signal with the information signal."

The Appellant argues that the distortion defined in Watson is not equivalent to the Appellant's claimed "determination of perceptual quality of the processed signal." The Examiner disagrees with this assessment. As noted on page 9 of the Brief filed on 17 September 2007, the Appellant notes that Watson defines "distortion" in paragraph 0215, and argues that the definition is very different from the Appellant's claimed measure of perceptual quality of the processed signal. The Examiner holds that the distortion disclosed in Watson provides for a measure in the perceptual quality, since paragraph 0215 states that the "distortion evaluation calculates how much distortion exits (step **30**) and determines whether the distortion is acceptable relative to a perceptual threshold (step **32**)."

Since Watson's computing of the distortion includes determining whether the distortion is acceptable relative to a perceptual threshold, the prior art teach the Appellant's claimed

"determination of perceptual quality of the processed signal" and the rejection should be
sustained.

Furthermore, the appellant's arguments on page 9 that the references fail to show certain
features of Appellant's invention, it is noted that the features upon which Appellant relies, such
as the measure of perceptual quality being indicative of a perceivable change in the information
content of the information signal caused by the signal modification process, are not recited in the
rejected claims. Although the claims are interpreted in light of the specification, limitations from
the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26
USPQ2d 1057 (Fed. Cir. 1993).

Since it has been shown above that Watson teaches comparing the processed signal with
the information signal (paragraph 0212, a distortion measurement compares the original input
signal with the encoded signal) to determine a measure of perceptual quality of the processed
signal (paragraph 0215, distortion evaluation calculates how much distortion exits (step **30**) and
determines whether the distortion is acceptable relative to a perceptual threshold (step **32**)), the
rejection of independent claims 1, 11, and 14 should be sustained.

Response to arguments regarding the prior art rejections of claims 2-10 and 12

Appellant's arguments regarding the rejection of claims 2-10 and 12 amount to a general
allegation that the claims define a patentable invention without specifically pointing out how the
language of the claims patentably distinguishes them from the references.

The Examiner disagrees with the Appellant's assertion on page 12 that Watson fails to
describe comparing a first segment of the processed signal with a first segment of the
information signal. In paragraphs 0142, 0145, and 0146, Watson describes applying a

windowing function to the signal in order to compute the spectral noise and distortion.   As

noted in Watson, windows are used to break the signal into a plurality of simpler segments in

order to embed the watermark signal. Therefore, the comparing step as discussed above is done

on a segment by segment (disclosed by Watson as window by window) basis.

Since the prior discloses the use of windows and the comparing has been discussed

above, the rejection of claim 2, specifically comparing a first segment of the processed signal

with a first segment of the information signal, should by sustained.

The Examiner disagrees with the Appellant's arguments regarding claim 3 that Watson

does not show a second segment of a signal

subsequent to a first segment. Again, the Examiner

refers to Watson's use of windows. First, Watson

discusses window sequences at paragraph 0135,

which teaches that there is at least a sequence of

windows. Figures 15 and 16 of Watson have been

incorporated (see image inset to right) to show

subsequent segments. As discussed in paragraph

0142 of Watson, the numbers at the top of the waves

(3, 4, 5, 6, 7) enumerate the windows. While the

FIG. 15

FIG 16

windows may overlap, the occur at some point after the window preceding it, Thereby teaching

subsequent window segments.

Since Watson shows a second segment of a signal subsequent to a first segment in at least

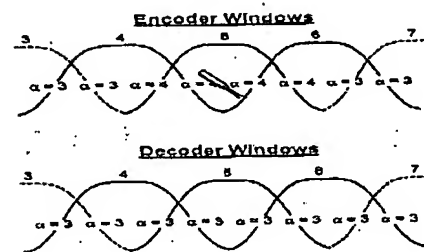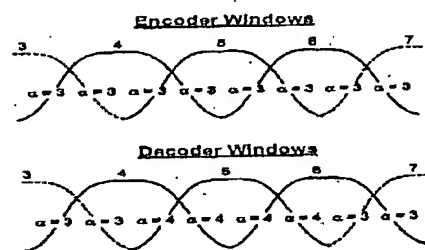figures 15 and 16, as well as paragraph 0142, the rejection should be maintained.

The Examiner disagrees with the Appellant's assertion that Watson does not show the limitation of claim 4, specifically delaying the segments of information so that the comparison steps can be conducted. Watson discloses the use of delay functions in order to perform comparisons steps in paragraph 0108. The Appellant has not shown how the delay functions used prior to comparison in Watson differ from the delaying used in the invention of the instant application. Since the appellant fails to show how the delay functions are different than the claimed delaying, and Watson accounts for delaying the segments of data, the rejection of claim 4 should be maintained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

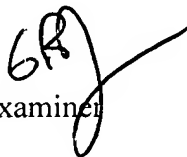For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Christian LaForgia
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